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STATISTICAL BULLETIN

METROPOLITAN LIFE INSURANCE COMPANY

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The Sixth Anniversary of the Dionne Quintuplets

FIVE little girls—the Dionne quintuplets—celebrated their sixth birthday together on May 28th, and the incident has attracted wide public attention. Never before has a similar event been recorded; no other quintuplets have been known to survive together more than a few hours after birth. These five sisters, premature and tiny at birth, by living to reach their sixth birthday also surpassed the record of many normal, full-term infants. About 94 percent of all newly born baby girls live to age 6, according to a recent life table, but the chance of any group of five baby girls surviving together to that age is appreciably smaller—namely, 75 percent. By thus surviving together to 6 years of age the quintuplets, as a group, have successfully overcome mortality risks quantitatively equivalent to those which the average woman meets in the course of the first 58 years of her life. In other words, the chances are 75 in 100 that a newly born girl baby will live to attain age 58, and the chances are likewise 75 in 100 that a group of five newly born babies will survive together to attain age 6.

At their present age, any one of these little Dionne girls, considered by herself, has an even chance of living 63 years more, thereby reaching age 69. The life table further tells us that as an unbroken group they may all expect to live another 41 years so as to reach age 47 together. These figures are based on average conditions of health prevailing at the present time in the United States. As wards of the King of England, however, and with the skillful care which has brought them from puny, premature infants to splendid, robust health, it is a fair presumption that they will do even better than this.

These little girls were fortunate to be born at a time when our knowledge of how to control sickness and death was being constantly extended. They were even more fortunate to have come under the care of Dr. Dafoe, who was so alert to use all the expedients of modern medical science in their behalf. But our medical knowledge is still advancing, and is being more and more generally applied. It is therefore a fair presumption that these children will do even better than would be

expected according to a current life table. Today, in the United States, the death rate, during the first year of life, is about 20 percent lower than when the Dionne girls were born. In Canada, the improvement has been somewhat smaller, even though the infant mortality rate in the Dominion is considerably higher than ours. Deaths from children's diseases such as measles, scarlet fever, whooping cough, and diphtheria, considered as a group, have declined about two thirds in this country since 1934; in Canada they have been reduced only about one eighth. Deaths from diarrhea and enteritis, once the scourge of infants, have declined about one quarter in the United States and about one third in Canada, in the same period of time. Tuberculosis has continued to decline in both countries, and pneumonia, particularly in 1939, through the use of serum and chemotherapy, showed a very decided drop, which, judging from the records of the Metropolitan Life Insurance Company's Industrial policyholders, may well be expected to continue through the present year and into the future.

What special hazards to life and health face these children and others in the coming year of life? According to the records of the Metropolitan Life Insurance Company's Industrial policyholders, accidents, at age 6, are by far the greatest danger to both boys and girls. Next in line, but causing considerably less than half as many deaths, comes influenza and pneumonia. Following fairly closely thereafter are appendicitis, heart disease, and tuberculosis. The excellent care given the Dionne girls should protect them from these and other hazards.

Longevity of the American People at a New Record

THIRTEEN and one-half years has been added to the average length of life in the American population as a result of the substantial improvement in health conditions since this century opened. Whereas the expectation of life at birth of the general population in our country in 1901 was only 49.24 years, the figure had increased to 62.78 years by 1938, this being the latest year for which the requisite data for the computation of a life table are available. The gain of 13.54 years achieved during this period amounts to 27½ percent of the original figure.* As a consequence of this beneficial change, the average person 19 years of age today has as many years of life remaining as the average child born in 1901. Details regarding expectation of life and mortality rates according to age in 1938 in the general population of the United States are shown in Table 1 on page 4. Table 2 contains a comparison of expectation of life at birth for various periods as far back as 1901.

*The figure for 1901 relates to the 10 Original Death Registration States and the District of Columbia; that for 1938 relates to the total United States. The change of area does not seriously affect the comparison.

Among white persons alone, the improvement in average length of life from 1901 to 1938 has been greater than that of the total population, including white and colored. Thus, during the period under survey, the expectation of life at birth among white males increased by 13.89 years and that of white females by 15.12 years. In the case of white males, the gain represents an advance of the expectation of life at birth from 48.23 years in 1901 to 62.12 years in 1938; for white females, the figures are 51.08 years in 1901 and 66.20 years in 1938. This figure for white females is especially noteworthy. It is just about 1⅔ years below the all-time record for average length of life, set by females in New Zealand in 1931.

That 1938 was an exceptionally favorable health year is brought out strikingly by an examination of the year-to-year changes in expectation of life at birth during the last decade. Compared with 1937, the figure for 1938 establishes a gain of 1.3 years in average length of life in one calendar year. No year-to-year gain during the decade was as great as that; the closest approach to it is an increase of 0.81 year from 1931 to 1932. Incidentally, it may be noted that the decade so far shows only two setbacks in average length of life—one from 1933 to 1934 and another from 1935 to 1936. Whether or not 1939 will fall behind 1938 remains to be seen, but current indications are that the figures for the two years will be very close together.

The description so far has been concerned with expectation of life. A brief comment is in order regarding the changes that have taken place in mortality rates at representative ages from 1901 to 1938, for it is the resultant effect of these changes that are reflected in the comparisons of expectation of life at birth. Such an examination of the mortality rates shows that the rate in the first year of life in 1938 is only two fifths that in 1901;* at each age from 1 to 4, the recent rate is only about one fifth that in 1901. At age 20, the mortality rate in 1938 was two fifths of the rate in 1901; at age 35, it was around one half; and at age 50, about three quarters the earlier figure. Thus, practically all ages have shared in the general improvement in mortality since the beginning of the century.

Whatever satisfaction may be found in the present status of American longevity, there can be no doubt that the average length of life for the general population today is still capable of a substantial increase. There is no basic reason why the average length of life of the total population should not reach, in the next few years, the mark of 66 years set by white females of today. Experience has already shown that an improvement of this kind is possible, for in Table 2 it is seen that the expectation of life at birth for total persons in 1938 is practically identical with that for white females

*Mortality rates for 1938 are shown in Table 1; those for 1901 are published by J. W. Glover in *United States Life Tables, 1890, 1901, 1910, and 1901–1910*, Bureau of the Census, Washington, D. C., 1921.

TABLE 1

Expectation of Life and Mortality Rate per 1,000 at Specified Ages for Total Persons (White and Colored) and for White Persons by Sex, United States, 1938

AGE	EXPECTATION OF LIFE, YEARS			MORTALITY RATE PER 1,000		
	TOTAL PERSONS	WHITE MALES	WHITE FEMALES	TOTAL PERSONS	WHITE MALES	WHITE FEMALES
0	62.78	62.12	66.20	47.13	49.26	38.61
1	64.86	64.31	67.84	6.76	6.35	5.77
2	64.30	63.72	67.23	3.38	3.32	2.94
3	63.52	62.93	66.43	2.32	2.38	1.95
4	62.66	62.08	65.56	1.79	1.80	1.53
5	61.77	61.19	64.66	1.48	1.50	1.28
10	57.13	56.57	59.98	.96	1.05	.77
15	52.44	51.89	55.22	1.54	1.53	1.09
20	47.91	47.33	50.57	2.36	2.16	1.67
25	43.50	42.86	46.02	2.89	2.51	2.11
30	39.14	38.40	41.51	3.33	3.01	2.45
35	34.81	34.01	37.04	4.34	4.06	3.10
40	30.61	29.75	32.64	5.79	5.66	4.06
45	26.54	25.66	28.34	7.74	8.04	5.49
50	22.64	21.78	24.17	11.14	11.94	7.94
55	18.98	18.16	20.19	15.31	16.98	11.38
60	15.49	14.79	16.42	21.91	24.75	17.40
65	12.34	11.78	13.01	34.85	38.61	28.96
70	9.64	9.20	10.04	51.89	56.83	45.11
75	7.31	6.99	7.47	79.84	87.21	73.38
80	5.43	5.26	5.43	118.55	126.39	114.58

TABLE 2

Expectation of Life at Birth Among Total Persons (White and Colored) and Among White Persons by Sex, United States, from 1901 to 1938

YEAR	EXPECTATION OF LIFE AT BIRTH, YEARS		
	TOTAL PERSONS	WHITE MALES	WHITE FEMALES
1938*	62.78	62.12	66.20
1937*	61.48	60.75	65.08
1936*	60.81	60.18	64.36
1935*	61.37	60.72	64.72
1934*	60.79	60.24	64.18
1933*	61.26	60.86	64.40
1932†	61.07	60.69	64.38
1931†	60.26	59.88	63.56
1929–1931§	59.50	59.31	62.83
1919–1920¶	....	55.33	57.52
1910‡	51.49	50.23	53.62
1901‡	49.24	48.23	51.08

*Total United States. †United States, excluding Texas. ‡Original Death Registration States.
§United States, excluding Texas and South Dakota.
¶Aggregate of 27 States; not computed for total persons.

in 1929–1931. However, to achieve further gains in longevity it will be necessary, more than ever before, to make available to the less favored sections of our population the same degree of medical and public health care found in the most advanced communities. If this were accomplished, the expectation of life of the people of the United States could be further increased to the 70-year mark.

The Outlook for Diabetes in the 1940's

THE death rate from diabetes has resumed its upward trend after a temporary arrest. Thus far this year the mortality from the disease among Metropolitan Industrial policyholders is 13 percent above that in the same period of last year, which itself marked a new high. Except for 1938, the diabetes death rate tended upward at a more or less steady rate during the whole of the decade just closed.

But a mere recital of the general trend at all ages combined fails to reveal certain important characteristics which, on more detailed examination with regard to sex and age, are found to be consistently displayed. First, at all ages under 25, the mortality has declined to a level which can hardly be improved, short of practically wiping out the disease altogether, because at these ages the rates for several years have been in the neighborhood of one to two per 100,000 a year. This is a solid achievement of insulin therapy. Indeed, at every age group up to 55 to 64 among males and 45 to 54 among females, the rates in recent years have been at or near their minima for the last decade or more. At ages 45 to 54 the rates in both sexes have, for the last decade, fluctuated within very narrow limits about an essentially horizontal trend. Among females at ages 55 to 64 no marked rise in the rate has taken place since 1932. Only past age 65 have the rates steadily increased, and at these advanced ages the rise has been exceedingly steep.

These changes in the age-specific mortality have occurred in a population that includes a steadily increasing proportion of older persons. If appropriate correction is made for this important fact, the rise in the rate at all ages is much more moderate. Thus, the increase in the adjusted rate from the first to the second half of the last decade was 2 percent, compared to 14 percent for the unadjusted or crude death rate.

Since there is no promise of any reversal in trend in the decade just begun, it will be interesting to see what the effects of these changes in age composition of the population and in the age-specific mortality from diabetes will be on the prospective trend of the death rate at all ages. The chart on page 6 shows the death rates for 1930 to 1939, both crude and adjusted, and a straight line projection of the trend of these rates to the beginning of the

DIABETES

CRUDE AND ADJUSTED DEATH RATES 1930 TO 1939, WITH TRENDS PROJECTED TO 1950
METROPOLITAN LIFE INSURANCE COMPANY, INDUSTRIAL DEPARTMENT

next decade in 1950. The striking feature of the chart is the rapid rise expected in the crude rate, to a point, in 1950, 26 percent above the current rate, and 90 percent above that actually recorded a decade ago. In contrast, the adjusted rate shows a much more moderate rise, the expected rate in 1950 being 7 percent above that of 1940 and 24 percent above the adjusted rate of 1930.

The continued rise in reported diabetes mortality reflects the working of many forces. First is the unabated interest in the disease and the alertness on the part of physicians in discovering new cases. This has been stimulated by the continued advances, both in the knowledge of the disease and in its treatment. For example, intensive research is being conducted in several centers on the endocrine relationships involved in diabetes and in metabolism generally. One result already obtained is that it has been found possible to produce permanent diabetes in dogs by the injection of anterior pituitary extract. The success in producing diabetes experimentally in this way has opened up many new avenues of study, which bring within the realm of probability the means for the prevention of the disease, if diagnosed early, and even the eventual discovery of a cure for at least certain types of cases. There has likewise been unremitting research in ways of improving insulin so that now the original type of

insulin developed for use in treating diabetes has been supplanted to a great extent. Where a quick-acting variety is needed, the place of the original insulin has already been taken by a purer crystalline type. In the usual plan of treatment of the patient, the quick-acting type merely supplements protamine zinc insulin, the slow-acting type in general use. This slow- and prolonged-acting kind has won increasing acceptance because so many cases of diabetes can be controlled by a single daily injection, either alone, or simultaneously with the quick-acting kind. But protamine zinc insulin is only one of several slow-acting insulins which have been studied. It may be that in the next few years a still better type will be evolved.

The mortality statistics from diabetes, therefore, despite the appearance they give of a deteriorating situation, should really cause little concern. The rapid increase in deaths reported at the older ages is undoubtedly due to the fact that a great many relatively mild cases in old people are now being diagnosed, which formerly were missed altogether. Many cases also formerly were diagnosed only after serious complications had developed, but now most of them are caught early. These patients live longer and are more active and comfortable. The known incidence of the disease has increased much faster than the death rate. In the absence of compulsory reporting of diabetes, we do not have exact data on the actual numbers in the country, but a reasonable estimate is 500,000 to 600,000. Some estimates place the figure even higher. It is not unlikely that by the end of the new decade the number of diabetics in the country will reach 1,000,000.

It is fairly certain that if death rates from diabetes could be computed on the basis of the diabetic population rather than on the general population, they would show a decreasing mortality. Computations of this kind, based on a follow-up of patients of the George F. Baker Clinic, show great improvement in the death rate among diabetics at practically every age. The improvement is most striking among diabetic children, whose death rates currently are actually only a tiny fraction of those prevailing among young patients before the discovery of insulin, when the vast majority died within a year of onset of the disease. Today, hundreds of diabetic children are growing up to manhood and womanhood, taking their places as productive citizens in the life of their communities.

The mortality from diabetic coma, formerly responsible for the majority of deaths of diabetics, has been reduced to relatively insignificant proportions, and, in the best clinical experiences today, a death from uncomplicated coma in a patient under treatment is rare. Death rates from most other conditions, even from gangrene, to which the older diabetic is especially susceptible, have been cut. Most diabetics today, when they die, succumb to

the diseases which cause the deaths of nondiabetics of the same age, as for example, cardiovascular diseases, pneumonia, and cancer, although most of these deaths are still charged to diabetes in the mortality statistics.

On the whole, the outlook for diabetics, if not for the recorded death rate from diabetes, is distinctly encouraging. Many cases of the disease probably can be prevented or postponed by continued propaganda for control of body weight, particularly among persons with a diabetic heredity. When diabetes develops, the chances of early diagnosis are immeasurably better than before, and this is even more true of the patient's chances of keeping his disease under control. To aid him, he has the advantages of the new types of insulin. He can acquire a good working knowledge of the fundamentals in the handling of his disease—diet, insulin, and exercise. He can learn how to avoid difficulties resulting from his diabetes. He can learn also what to do or have done in any emergency. Above all, he keeps in contact with a physician intimately concerned with his welfare.

The intelligent and well-trained diabetic who sticks to the rules compares favorably with the nondiabetic in his ability to carry on vigorous physical or mental activity. The young diabetic especially who controls his disease, which in other times was disabling and rapidly fatal, is an example and inspiration to his fellow men.

Our World's Fairs Exhibits

THE Metropolitan Life Insurance Company cordially invites readers of the STATISTICAL BULLETIN to attend its exhibits in the Business Systems and Insurance Building, New York World's Fair, and in the Hall of Science, Golden Gate International Exposition, San Francisco, Calif.

Attention is also drawn to the Medical and Demographic Exhibits in the Hall of Man, New York World's Fair, sponsored by a group of organizations, including this Company.

Health Record for April 1940

REPORTS from every available source point clearly to the conclusion that, during the first four months of this year, the United States has experienced an era of low mortality almost unprecedented during the corresponding part of any previous year.

The most convincing evidence of how favorable are current health conditions is the mortality record of the millions of Industrial policyholders of the Metropolitan Life Insurance Company. Their year-to-date death rate at the close of April was 8.42 per 1,000—a figure that just missed being the lowest of all time for any January-April period, the exception being in 1938, when a rate of 8.41 was recorded. The month of April itself set a new low mortality rate for this particular month, namely, 8.05 per 1,000 as compared with the previous minimum of 8.13 registered for April 1938. Among the Metropolitan's Industrial policyholders in Canada, who number approximately 1,250,000, an all-time minimum death rate for the first four months of the year was recorded.

Among the insured, all four of the principal epidemic diseases of childhood show declines since 1939, when each of these diseases registered a new low death rate. These conditions, together with pneumonia, tuberculosis, infantile diarrhea, appendicitis, diseases of pregnancy and childbirth, and homicides, give promise of setting new records for low mortality in 1940. Outstanding among all of the favorable developments of the current year, to date, is a 26 percent drop in the death rate for pneumonia. This large decline clearly reflects the success of the newer methods in the treatment of this disease. The unfavorable items in the record of 1940, to date, are rises in the mortality from cancer, diabetes, diseases of the coronary arteries, and chronic nephritis.

Figures relating to the general population of 88 major cities in the United States show that fewer deaths occurred than during the corresponding part of 1939, a year in which next to the lowest death rate in the history of the country was registered. In certain sections, however, notably the South Atlantic, East South Central, and West South Central Divisions, the mortality record in the large cities is not as favorable as it was in the like part of 1939. For New York City the report is outstandingly good, as the general death rate is running 6 percent below last year's level, and there has been a marked drop in infant mortality together with a small decline in puerperal mortality.

The country, thus far in 1940, has been free from any widespread outbreak of any epidemic disease.

Morbidity reports from the general population of the country show that there was less sickness from diphtheria, influenza, poliomyelitis, and smallpox, during April, than

was reported in either March 1940 or in April 1939. Although there were more cases of measles, typhoid fever, and whooping cough than were reported during March, the incidence of each of these diseases was below that recorded in April of last year.

Among the items of special health interest recently reported are: A Pneumonia Control Program in Tulsa and Oklahoma City has been started through the cooperation of the Tulsa and Oklahoma county medical societies, the State Health Department, and the Department of Bacteriology of the University of Oklahoma School of Medicine. Laboratory service, serums, and sulfapyridine have been furnished free to those unable to pay for them and unable to obtain them elsewhere. Students entering the College of the City of New York are now required to submit to tests for tuberculosis. The students with positive reaction will be barred from the college if the disease is in a communicable state. Those with negative reactions will be examined each year. A State-supported hospital for the control of cancer was recently opened in Missouri, the third State to open such an institution. The hospital will be used solely for research and treatment of cancer. Only residents of the State will be admitted.

It was recently announced by the Director of the Division of Vital Statistics of the New York State Department of Health that, as a result of the State marriage and syphilis law, the marriages of nonresidents have been reduced more than 90 percent since 1936, while marriages of residents increased over 1938. The relationship between human infantile paralysis and equine encephalomyelitis will be studied at the Hooper Foundation for Medical Research at the University of California. This study will be made possible through a donation of $13,800 by the National Foundation for Infantile Paralysis, Inc. The Report, *A Standard Highway Safety Program for States*, has been released by the Automotive Safety Foundation of New York, N. Y. This is offered as a working program to increase traffic efficiency and to reduce accidents on the streets and highways of the Country.

The following table shows the mortality among Industrial policyholders for April 1940, March 1940, and April 1939, together with the death rates for the first four months of each year.

METROPOLITAN LIFE INSURANCE COMPANY

Death Rates per 100,000 Policyholders from Selected Causes. Industrial Department. Weekly Premium-Paying Business*

Causes of Death	Annual Rate per 100,000 Policyholders*				
	April 1940	March 1940	April 1939	Year to Date: End of April	
				1940	1939
All Causes—Total	805.0	858.3	842.3	841.8	868.5
Typhoid fever	.4	.7	.5	.5	.4
Measles	.5	.4	1.1	.4	1.0
Scarlet fever	1.1	.9	.9	.9	1.2
Whooping cough	1.3	1.4	1.5	1.4	2.1
Diphtheria	.9	.7	.8	1.2	1.4
Influenza	9.7	15.4	20.2	14.8	19.0
Pneumonia (all forms)	47.9	54.9	59.5	54.7	73.9
Tuberculosis (all forms)	49.8	45.5	47.9	46.8	47.5
Tuberculosis of respiratory system	44.7	41.8	42.5	42.8	42.6
Syphilis	11.9	12.2	12.1†	12.4	11.7†
Cancer (all forms)	98.6	104.2	99.6	103.4	101.4
Diabetes mellitus	32.1	35.2	26.7	33.1	29.3
Cerebral hemorrhage	63.8	66.4	65.8	66.2	66.0
Diseases of the coronary arteries	51.1	51.1	42.8	52.2	43.5
Angina pectoris	3.7	3.0	5.9	3.5	7.4
Diseases of the heart (other forms)‡	170.2	186.3	169.3	179.4	179.8
Diarrhea and enteritis	3.2	3.6	4.0	3.6	4.7
Appendicitis	8.8	9.5	10.5	9.0	9.7
Chronic nephritis	60.7	66.0	53.0	63.0	57.1
Puerperal state—total	4.2	5.6	6.6	4.8	5.6
Suicides	7.8	8.6	8.9	8.0	8.4
Homicides	3.0	3.0	4.6	3.1	4.4
Accidents—total	39.3	37.0	41.2	43.1	43.5
Home accidents	11.8	11.5	13.3	14.0	13.9
Motor vehicle accidents	13.7	12.3	15.3	15.3	17.1
Automobile accidents§	12.8	11.3	14.6	14.2	16.1
All other causes of death	135.1	147.1	158.8	136.3	149.3

*The rates for 1939 and 1940 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

†Excludes aneurysm of the aorta.

‡Excludes pericarditis, acute endocarditis, and acute myocarditis.

§Excludes collisions between automobiles and railroad trains or streetcars.

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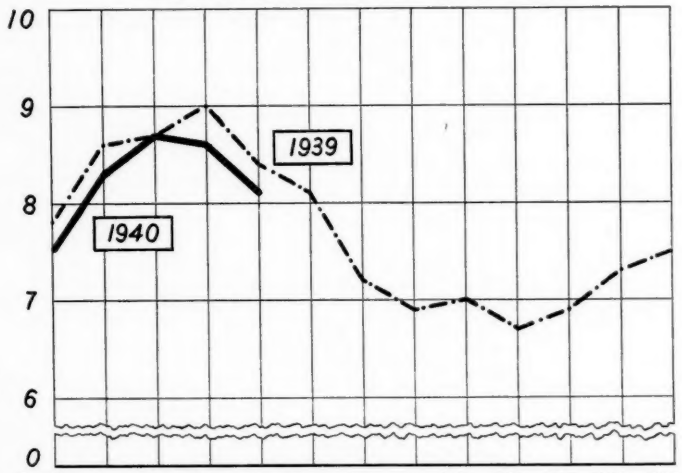
MORTALITY FROM ALL CAUSES

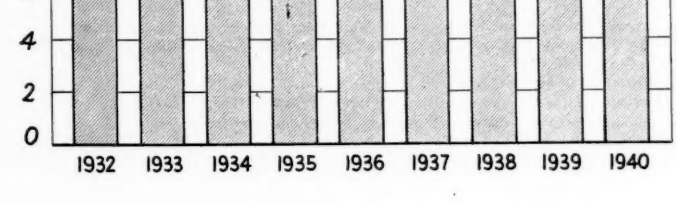
METROPOLITAN LIFE INSURANCE COMPANY
DEATH RATES PER 1,000 POLICYHOLDERS - ANNUAL BASIS
INDUSTRIAL DEPARTMENT - WEEKLY PREMIUM-PAYING BUSINESS

DEATH RATES BY MONTHS: 1939 AND 1940



(DEC)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1939	8.6	8.7	9.0	8.4	8.1	7.2	6.9	7.0	6.7	6.9	7.3	7.5
1940	8.3	8.7	8.6	8.1								

DEATH RATES FOR JANUARY TO APRIL, 1932 - 1940



Rates for 1939 and 1940 are Provisional

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